

CLAIMS

What is claimed is:

1. A fire extinguisher comprising:

5 a bottle having an interior and at least an outlet;

a fire suppressant contained by the bottle when the extinguisher is in a pre-discharge condition; and

10 a gas generant and discharge assembly extending through the bottle outlet and secured there to and comprising:

15 a source of gas for pressurizing the suppressant at least when the bottle is in a discharging condition comprising:

an ignition cord having a sheath and a pyrotechnic charge contained within the sheath and extending from a proximal end to a distal end;

20 a flexible tube surrounding the sheath at least along a major portion of a length thereof and extending from a proximal end to a distal end;

a gas generant charge contained between the tube and sheath; and means for igniting the ignition cord; and

25 an outlet, through which the suppressant is discharged when the extinguisher is in the discharging condition.

2. The fire extinguisher of claim 1 wherein:

the means for igniting comprises a percussion primer having a primer charge and an operative end in close facing relationship to the proximal end of the ignition cord effective to ignite the ignition cord;

25 the gas generator and discharge assembly comprises:

a first handle portion positioned to be gripped by the fingers of a user's hand and a second handle portion positioned to be simultaneously engaged by a palm of said hand and mounted to be shifted toward the first handle portion responsive to a compressive force applied by the hand;

30 a firing pin mechanism mounted for spring-biased movement between an initial position and second position in which an operative end portion of the firing pin mechanism contacts the percussion primer with effective momentum to trigger the primer.

3. The fire extinguisher of claim 2 wherein:

the firing pin mechanism comprises:

a spring-loaded firing pin initially held in its initial position by a sacrificial element against the spring-bias force; and

5 a lance shiftable between its initial position and its second position by said movement of the second handle portion, the shift of the lance rupturing the sacrificial element to release the firing pin.

4. The fire extinguisher of claim 3 further comprising a seal, initially between the lance

10 and the firing pin and initially sealing the bottle interior from an external environment and mounted so as to be ruptured by the shift of the lance.

5. The fire extinguisher of claim 4 wherein the gas generator and discharge assembly further comprises a rigid metallic firing pin housing having :

15 a distal end portion containing proximal end portions of the ignition cord and flexible tube;

an intermediate portion holding the primer-in-press-fit relation; and

a proximal portion at least partially containing the firing pin; and

20 wherein a discharge path for the suppressant extends through at least one lateral aperture in the firing pin housing and, therefrom, through a proximal end of the firing pin housing.

6. The fire extinguisher of claim 5 wherein in the pre-discharge condition the pressure within the bottle is lower than 70 psi and the ignition cord pyrotechnic charge and the gas

25 generant charge are, in combination, effective to at least temporarily elevate the pressure within the bottle to between 300 and 450 psi.

7. The fire extinguisher claim 1 wherein the suppressant consists in major mass part of heptafluoropropane, and has a total mass of less than 7 pounds.

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8. The fire extinguisher of claim 7 wherein the total mass is 2-3 pounds.

9. The fire extinguisher of claim 7 wherein a minimum bottle diameter between the interior and the outlet is no more than 0.5 inch.
10. The fire extinguisher of claim 9 wherein the ignition cord has a length of between 1 and
5 3 feet.
11. The fire extinguisher claim 1 wherein the ignition cord has a length of at least one foot.
12. The fire extinguisher of claim 1 wherein the suppressant comprises 2-3 pounds of
10 dodecafluoro-2-methylpentan-3-one.
13. The device of claim 1 wherein the suppressant consists essentially of at least one fluorocarbon.
- 15 14. A method for remanufacturing a discharged vaporizing-liquid fire extinguisher comprising:
removing a first discharge assembly from an extinguisher bottle;
removing a dip tube from the bottle;
cleaning the bottle;
20 filling the bottle with a liquid suppressant;
inserting a gas generator into the bottle; and
either reinstalling the first discharge assembly or installing a second discharge assembly.
- 25 15. The method of claim 14 wherein:
the removal of the dip tube is simultaneous with or subsequent to the removal of the first discharge assembly;
the insertion of the gas generator comprises positioning the gas generator so as to replace the dip tube or an assembly, which had included the dip tube;
30 the step of filling the bottle with a liquid suppressant comprises filling the bottle with a liquid having a vapor pressure of less than 100 psi at 21°C; and
the gas generator is inserted after the bottle is filled.

16. The method of claim 14 wherein the second discharge assembly is a reconditioned discharge assembly from a substantially identical vaporizing-liquid fire extinguisher.
17. The method of claim 14 wherein the step of inserting a gas generator comprises feeding
5 an elongate flexible gas generant-containing member into the bottle, the member having a length longer than a length of the bottle so as to place the member in a convoluted condition within the bottle.

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